

DIRECTIONAL SOLIDIFICATION OF A METAL**Abstract of the Disclosure**

A molten material can be heated, melted and directly solidified in a single vessel.

Induction heating and melting of the molten material is achieved by magnetically coupling the
5 field produced by current flow in a plurality of induction coils surrounding the vessel with either
the molten material in the vessel, or a susceptor surrounding molten material in the vessel.
Current flow is selectively removed from the plurality of induction coils, and a cooling medium
surrounding the vessel, such as water flowing through hollow induction coils, solidifies the
molten metal into a highly purified crystalline solid.